WHAT IS CLAIMED IS:

1. A method comprising the steps of:

inputting an optical signal into an optical waveguide structure for providing a nonlinear effect;

generating chirp in said optical signal by said nonlinear effect; and

supplying an output optical signal output from said optical waveguide structure to an optical filter to remove a component in which said chirp is small from said output optical signal.

2. A method according to claim 1, wherein said optical waveguide structure comprises an optical fiber for providing normal dispersion.

3. A method according to claim 1, wherein said optical filter comprises an optical bandstop filter having a center wavelength substantially coinciding with the center wavelength of said optical signal.

4. A method according to claim 3, further comprising the step of supplying said output optical signal to an optical bandpass filter to remove a component in which said chirp is larger than that in a main slope portion of a pulse of said optical signal.

5. A method according to claim 1, further comprising the step of supplying said optical signal to be input into said

optical waveguide structure to an optical filter to remove a noise component outside of a signal band in said optical signal.

6. A method according to claim 1, further comprising the step of optically amplifying said optical signal to be input into said optical waveguide structure so that a required amount of chirp is obtained.

7. A method according to claim 1, further comprising the step of supplying said output optical signal to a dispersion compensator so that said output optical signal undergoes dispersion compensation.

8. A method according to claim 7, wherein:

said optical waveguide structure comprises a first optical fiber for providing normal dispersion; and

said dispersion compensator comprises a second optical fiber for providing anomalous dispersion;

said method further comprising the step of adjusting a dispersion and input power of said second optical fiber so that pulse compression is performed to such an extent that a defect near the pulse peak of an optical signal output from said second optical fiber is reduced.

9. A method according to claim 8, further comprising the step of supplying said optical signal output from said second optical fiber to an optical bandpass filter so that the pulse

width of said optical signal output from said second optical fiber substantially coincides with the pulse width of said optical signal input into said first optical fiber.

10. A method according to claim 1, further comprising the step of performing pulse compression on said optical signal to be input into said optical waveguide structure.

11. A method according to claim 10, wherein said pulse compression performing step comprises the step of passing said optical signal through a first optical fiber for providing normal dispersion and a second optical fiber for providing anomalous dispersion.

12. A method according to claim 1, wherein said optical signal to be input into said optical waveguide structure comprises WDM signal light obtained by wavelength division multiplexing a plurality of optical signals.

13. A method according to claim 12, wherein said optical waveguide structure comprises an optical fiber for providing normal dispersion, said optical fiber having a dispersion large enough to eliminate the occurrence of crosstalk between channels of said WDM signal light.

14. A device comprising:

an optical waveguide structure for providing a nonlinear optical effect so that chirp is generated in an optical signal input; and

an optical filter for accepting an output optical signal output from said optical waveguide structure to remove a component in which said chirp is small from said output optical signal.

15. A device according to claim 14, wherein said optical waveguide structure comprises an optical fiber for providing normal dispersion.

16. A device according to claim 14, wherein said optical filter comprises an optical bandstop filter having a center wavelength substantially coinciding with the center wavelength of said optical signal.

17. A device according to claim 16, further comprising an optical bandpass filter for accepting said output optical signal to remove a component in which said chirp is larger than that in a main slope portion of a pulse of said optical signal.

18. A device according to claim 14, further comprising an optical filter for accepting said optical signal to be input into said optical waveguide structure to remove a noise component outside of a signal band in said optical signal.

19. A device according to claim 14, further comprising an optical amplifier for optically amplifying said optical signal to be input into said optical waveguide structure so that a required amount of chirp is obtained.

20. A device according to claim 15, further comprising a dispersion compensator for accepting said output optical signal.

21. A device according to claim 20, wherein: said optical waveguide structure comprises a first optical fiber for providing normal dispersion; and

said dispersion compensator comprises a second optical fiber for providing anomalous dispersion;

said device further comprising an optical bandpass filter for accepting an optical signal output from said second optical fiber so that the pulse width of said optical signal output from said second optical fiber substantially coincides with the pulse width of said optical signal input into said first optical fiber.

22. A device according to claim 14, further comprising means for performing pulse compression on said optical signal to be input into said optical waveguide structure.

23. A device according to claim 22, wherein said pulse compression performing means comprises a first optical fiber for providing normal dispersion and a second optical fiber for providing anomalous dispersion.

24. A device according to claim 14, wherein said optical signal to be input into said optical waveguide structure comprises WDM signal light obtained by wavelength division

multiplexing a plurality of optical signals.

25. A device according to claim 24, wherein said optical waveguide structure comprises an optical fiber for providing normal dispersion, said optical fiber having a dispersion large enough to eliminate the occurrence of crosstalk between channels of said WDM signal light.

26. A system comprising:

an optical fiber transmission line for transmitting an optical signal; and

an optical signal regenerating device for accepting an optical signal output from said optical fiber transmission line;

said optical signal regenerating device comprising an optical waveguide structure for providing a nonlinear optical effect so that chirp is generated in said optical signal supplied, and an optical filter for accepting an output optical signal output from said optical waveguide structure to remove a component in which said chirp is small from said output optical signal.

27. A system according to claim 26, further comprising a second optical fiber transmission line for transmitting said output optical signal.

28. A system according to claim 27, further comprising an optical transmitter connected to an input end of said

optical fiber transmission line, and an optical receiver connected to an output end of said second optical fiber transmission line.

29. A system according to claim 26, wherein said optical signal transmitted by said optical fiber transmission line comprises WDM signal light obtained by wavelength division multiplexing a plurality of optical signals.

30. A system according to claim 27, wherein each of said optical fiber transmission line and said second optical fiber transmission line comprises an optical amplifier repeater transmission line including at least one optical amplifier.

31. A method according to claim 1, wherein:

said optical waveguide structure comprises a first optical fiber for providing normal dispersion;

said method further comprising the step of amplifying an optical signal output from said optical filter and supplying an amplified optical signal to a second optical fiber for providing normal dispersion.

32. A device according to claim 14, wherein:

said optical waveguide structure comprises a first optical fiber for providing normal dispersion;

said device further comprising an optical amplifier for amplifying an optical signal output from said optical filter, and a second optical fiber for accepting an optical signal

amplified by said optical amplifier;

said second optical fiber providing normal dispersion.